

REMARKS

Claims 1 and 17 are amended. Claims 9-16 and 23-51 are cancelled. Claims 52-65 are added. Claims 1-8, 17-22 and 52-65 are in the application for consideration.

A Letter Submitting Formal Drawings is included herewith, and a copy of a red-lined version thereof wherein Fig. 4 has been amended. Specifically, the lower designation of the substrate has been changed from "118b" to "110b". Entry of this drawing amendment is requested.

The specification is amended to insert serial number information which became available subsequent to this application filing.

Independent claims 1 and 17 stand rejected as being anticipated by U.S. Patent No. 6,127,218 to Kang. However, Kang only everywhere discloses providing sequential first and second oxidizing streams of different compositions, and not of the same composition. Independent claims 1 and 17 have been amended to recite the flowing of a constant composition oxidizer stream and changing the flow rate of the constant composition oxidizer stream to the reactor at least once to effect a change in atomic concentration of titanium within the deposited barium strontium titanate comprising dielectric layer. Kang clearly only teaches depositing different stoichiometric BST layers by changing the composition of its oxidizer stream. Accordingly, it is virtually inconceivable that Kang could suggest doing that which Applicant now recites in amended claims 1 and 17. Accordingly, such claims are neither anticipated

nor obvious over the Kang reference. Therefore, withdrawal of the rejection of independent claims 1 and 17 is requested.

Those claims depending from Applicant's independent claims 1 and 17 should be allowed as depending from allowable base claims, and for their own recited features which are neither shown nor suggested in the cited art. Action to that end is requested.

Claims 52-65 are added. Independent claims 52 and 60 thereof are patterned after the above-referenced independent claims 1 and 17, but recite the flowing of only a single oxidizer to the reactor, and changing the flow rate thereof at least once to effect a change in relative atomic concentration of barium and strontium within the deposited barium strontium titanate comprising dielectric layer. Such is neither shown nor suggested by the Kang reference as different composition oxidants are flowed to effect different composition in the barium strontium titanate deposited layer, and therefore, there is no disclosure or suggestion of using only a single oxidant as Applicant claims and as is supported by Applicant's specification.

Those claims depending from Applicant's independent claims 52 and 60 should be allowed as depending from allowable base claims, and for their own recited features which are neither shown nor suggested in the cited art. Action to that end is requested.

The Examiner's reference to Gardner et al. in the action is misplaced. Specifically, Gardner's reference to certain oxidants is with respect to the

fabrication of his layer 14, which is only disclosed as being silicon dioxide or oxynitride. (col.3, Ins.29-32). Only layer 16 in Gardner et al. is disclosed as possibly being barium strontium titanate, and none of the previously described processings associated with its non-BST layer 14 are attributed to its layer 16. (col.4, Ins.1-10).

On January 3, 2002, Applicant filed a Supplemental Information Disclosure Statement (including Form PTO-1449 and copies of the cited art). It is requested that the Examiner consider the art submitted therewith, initial the same on the two Forms PTO-1449 which accompanied the January 3, 2002 Supplemental Information Disclosure Statement, and print them on the face of the patent. Such is not seen to be discretionary by the Examiner. MPEP §609(D).

This application is believed to be in immediate condition for allowance, and action to that end is requested.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 09/905,320
Filing Date July 13, 2001
Inventor Cem Basceri et al.
Assignee Micron Technology, Inc.
Group Art Unit 1762
Examiner Eric Fuller
Attorney's Docket No. MI22-1657
Title: Chemical Vapor Deposition Methods of Forming Barium Strontium
Titanate Comprising Dielectric Layers, Including Such Layers Having a
Varied Concentration of Barium and Strontium Within the Layer

VERSION WITH MARKINGS TO SHOW CHANGES MADE
ACCOMPANYING RESPONSE TO DECEMBER 19, 2001 OFFICE ACTION

In the Specification

The replacement specification paragraphs incorporate the following amendments. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

The paragraph beginning at line 6 on page 19 has been amended as follows:

Additional and/or alternate preferred processing can occur in accordance with any of our co-pending U.S. Patent Application Serial No. 09/476,516, filed on January 3, 2000, entitled "Chemical Vapor Deposition Methods Of Forming A High K Dielectric Layer And Methods Of Forming A Capacitor", listing Cem Basceri as inventor; U.S. Patent Application Serial No. 09/580,733, filed on May 26, 2000, entitled "Chemical Vapor Deposition Methods And Physical Vapor Deposition Methods", listing Cem Basceri as inventor; and U.S. Patent Application Serial No. ~~09/~~09/905,286, filed concurrently herewith, entitled "Chemical Vapor Deposition Methods Of Forming Barium Strontium Titanate Comprising Dielectric Layers", listing Cem Basceri and Nancy Alzola as inventors. Each of these is hereby fully incorporated by reference.

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

1. (Amended) A chemical vapor deposition method of forming a barium strontium titanate comprising dielectric layer having a varied concentration of barium and strontium within the layer, comprising:

positioning a substrate within a chemical vapor deposition reactor;

providing barium and strontium within the reactor by flowing at least one metal organic precursor to the reactor, and providing titanium within the reactor, and flowing ~~at least one oxidizer~~ a constant composition oxidizer stream to the reactor, under conditions effective to deposit a barium strontium titanate comprising dielectric layer on the substrate; the barium and strontium being provided within the reactor during all of the deposit of said layer at a substantially constant atomic ratio of barium to strontium; and

during said deposit, changing a rate of flow of the ~~oxidizer~~ constant composition oxidizer stream to the reactor at least once to effect a change in relative atomic concentration of barium and strontium within the deposited barium strontium titanate comprising dielectric layer.

17. (Amended) A chemical vapor deposition method of forming a barium strontium titanate comprising dielectric layer having a varied concentration of titanium within the layer, comprising:

positioning a substrate within a chemical vapor deposition reactor;

providing barium and strontium within the reactor by flowing at least one metal organic precursor to the reactor, and providing titanium within the reactor, and flowing ~~at least one oxidizer~~ a constant composition oxidizer stream to the reactor, under conditions effective to deposit a barium strontium titanate comprising dielectric layer on the substrate; the barium and strontium being provided within the reactor during all of the deposit of said layer at a substantially constant atomic ratio of barium to strontium; and

during said deposit, changing a rate of flow of the ~~oxidizer~~ constant composition oxidizer stream to the reactor at least once to effect a change in atomic concentration of titanium within the deposited barium strontium titanate comprising dielectric layer.

END OF DOCUMENT